

Drawing Amendments

Amend Figure 9 by accepting replacement sheet 7, attached as Exhibit A. An additional copy of this sheet is submitted herewith

Remarks

A. Response Drawing Objections.

The Examiner objected to Figure 4 because of the failure to reference character 5-5. Examiner's Action at 2, paragraph 2. This objection has been addressed by amending the brief description of Figure 5 to reference line 5-5 in Figure 4.

In the course of preparing this response, it was noted that the lead line arrow of reference numeral 86 in Figure 9 fails to point to the second row of welding stations. This error has been corrected by a replacement drawing sheet 7.

B. Response to Specification Objections.

The Examiner objected to various numbering and typographical errors in the specification. Examiner's Action at 2-3, paragraph 3. Each of the required corrections has been made by amendment.

In addition to these amendments, an erroneous reference to carriage "172" has been corrected to "162" in two instances on page 37.

C. Response to Section 112 Rejection.

The Examiner rejected claims 15-18 for indefiniteness, based on 35 U.S.C. § 112, because of use of the term "may be" in these claims. Examiner's Action at 4, paragraph 5. The Applicant has addressed this rejection by amending independent claim 15 to delete "may be positioned" and replace it with "is horizontally

positionable". It is believed that this objection overcomes the section 112 rejection of claim 15.

Claims 16-18 each depend from amended claim 15 and include all of its limitations. None of these dependent claims makes additional use of the "may be" terminology eliminated from claim 15. These dependent claims are thus allowable under section 112 for the same reasons discussed with regard to claim 15.

D. Response to Section 102 Rejections.

The Examiner rejected claims 15-18 under 35 U.S.C. § 102(b), in reliance on U.S. Patent No. 3,597,568, issued to Rach. Examiner's Action at 4-5, paragraph 7. Reconsideration of these rejections is requested.

The Applicant's claim amended 15 describes a welding apparatus featuring a first welding station "comprising adjacent first and second electrodes of opposed polarity." The first welding station is "situated in a first row within the welding area and positionable in contact with the first side of a panel framework in the first welding position." A second welding station, comprising electrodes of opposed polarity, is situated in a second row "longitudinally spaced from the first row." The second welding station is "positionable in contact with the second side of a panel framework."

The Rach patent discloses a welder for reinforced steel mats for use in concrete slabs and floors. A single row of electrodes 5 is used to weld crossbars 2 to longitudinal bars 1. See Rach

Figure 1. The single row of electrodes 5 are supported by a welding bar. Column 3, line 56. Welding is carried out by "applying a crossbar 2 from above by suitable feeding means ... to the electrodes 5." Column 4, lines 8-10.

Rach discloses only a single row of electrodes 5, and thus fails to satisfy amended claim 15's requirement of two longitudinally spaced rows of electrodes. Rach further fails to disclose a system in which the electrodes are capable of contacting the first and second (i.e., upper and lower) sides of the mat structure, as claim 15 requires. Claim 15 is accordingly not anticipated by Rach.

Claims 16-18 each depend from claim 15 and include all of its limitations. These dependent claims are not anticipated by the Rach patent for the same reasons discussed with regard to claim 15.

The Examiner rejected claims 15-18 under 35 U.S.C. § 102(b), in reliance on U.S. Patent No. 5,403,985 issued to Ahn. Examiner's Action at 5, paragraph 8. Reconsideration of these rejections is requested.

The Ahn patent discloses a welder for panels 10 that are formed from a layer of insulation 12 sandwiched between two wire meshes 18 and 24. The upper wire mesh 18 is formed from longitudinal and lateral wires 14 and 16, as is the lower wire mesh 24. Transverse wire supporting members 26 and 28 pass through the insulation 12, and are welded to the meshes 18 and 24 by the welder.

The components of Ahn's panel are supported on a main frame 30 and held in a fixed position by a clamping mechanism 32. See column 4, lines 53-58. Upper and lower electric welding mechanisms 40 and 42 are supported on a moving carriage 44 above and below the panel 10. The carriage 44 is moved from one end of the fixed panel 10 to the other. The upper and lower welding mechanisms 42 and 44 are periodically actuated to form welds respectively at the between supporting members 26 and 28 and upper and lower wire meshes 18 and 24.

As Ahn's Figure 10 illustrates, the positive and negative electrodes 200 and 202 of each welding mechanism are coaxial and closely spaced. These electrodes move longitudinally with respect to the panel 10 so as to enclose a support member 26 or 28 at its junction with the longitudinal wire of the upper or lower mesh.

In contrast, amended claim 15 requires that the first and second electrodes of the first welding station, which are of opposite polarity, have "a planar contact surface adapted to contact a planar conductive surface of the first side" of the panel framework. The claim has been further amended to provide that each side of the panel framework has "plural planar conductive surfaces." The "adapted to contact" terminology is a permissible functional limitation. See In re Venezia, 530 F.2d 956, 189 USPQ 149, 151 (CCPA 1976) (claim calling for sleeves "adapted to be fitted" over cables "imparts a structural limitation to the sleeves"); MPEP § 2173.05(g) (functional language may be used to claim invention).

In the Applicant's apparatus, as Figures 14-16 illustrate, the first and second electrodes 104 and 108 are disposed on parallel axes that extend transversely to the panel framework 14, rather than on a coaxial axis that extends longitudinally with respect to the panel, as in the Ahn patent. The Applicant's transverse axial positioning of the electrodes 104 and 108 adapts each electrode "to contact a planar conductive surface of the first side" of the panel framework. Specifically, the first electrode 104 contacts a planar side wall of rail 40, while second electrode 108 contacts a planar side surface of upright member 46.

The planar surfaces of the Ahn electrodes are not "adapted to contact a planar surface" in the first side of panel 10, as amended claim 15 requires. Instead, the planar surfaces of the Ahn electrodes are adapted to enclose a non-planar wire supporting member 26 or 28 at its junction with a longitudinal wire 14. Even if the Ahn panel included any planar conductive surface on the first side of panel 10, it would be impossible for that surface to contact the planar surfaces of either of Ahn's closely spaced coaxial electrodes 200 and 202. Claim 15 is accordingly not anticipated by the Ahn patent.

Claims 16-18 each depend from claim 15 and include all of its limitations. These dependent claims are not anticipated by the Ahn patent for the same reasons discussed with regard to claim 15.

A further reason why claim 16 is not anticipated by Ahn is because Ahn lacks "a conveyor capable of moving the panel framework horizontally within the welding area." As noted above, the

components of Ahn's panel 10 are held fixed on main frame 30 by clamping mechanism 32. Rather than moving the panel 10, Ahn instead moves the upper and lower welding mechanisms 40 and 42, on carriage 44. Claim 16 is accordingly not anticipated by Ahn.

The Examiner rejected claims 15-18 under 35 U.S.C. § 102(b), in reliance on U.S. Patent No. 4,917,284, issued to Candiracci. Examiner's Action at 5-6, paragraph 9. Reconsideration of these rejections is requested.

Candiracci discloses a welder for building panels used in the construction of insulated walls. The panels consist of an insulating layer 3 sandwiched between two square-mesh metal grids 4 and 5. Rods 16 pass through the insulating layer 3 and are welded to the grids 4 and 5 by upper and lower welding elements 19 and 51. The welding elements "are of a substantially known type and comprise pairs of pincers 67 bearing the welding elements 68 at one end and rotatable about a central fulcrum 69 upon actuation of a related jack 70." Column 3, lines 51-54.

Claim 15 requires that each welding station be formed from "adjacent first and second electrodes of opposed polarity." In contrast, Candiracci provides no disclosure of any electrodes. He states only that the welding elements 68 are "of a substantially known type." Anticipation under section 102 requires that the four corners of a single prior art document describe every element of the claimed invention, either expressly or inherently. See In re Paulsen, 30 F.3d 1475, 1478-79, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994). We know of no reason why the "substantially known" welding

elements 68 of Candiracci must inevitably constitute electrodes. Because Candiracci fails to disclose such electrodes within its four corners, it does not anticipate claim 15.

Much like Ahn's system, the Candiracci apparatus is adapted to weld at the junction of non-planar wires, rather than at planar surfaces. Even if it were assumed that Candiracci's welding elements were electrodes, Candiracci provides no teaching of a planar electrode surface "adapted to contact a planar conductive surface" in the first side of panel 2, as amended claim 15 requires. Even if the upper side of Candiracci panel 2 included a planar conductive surface, it would be impossible for any planar surface on either element 68 to contact it, because the elements 68 are mounted on closely spaced pincers 67 that are restricted to rotation about fulcrum 69. Claim 15 is accordingly not anticipated by the Candiracci patent.

Claims 16-18 each depend from claim 15 and include all of its limitations. These dependent claims are not anticipated by the Candiracci patent for the same reasons discussed with regard to claim 15.

The Examiner rejected claims 15-18 under 35 U.S.C. § 102(b), in reliance on U.S. Patent No. 4,174,475, issued to Senn. Examiner's Action at 6, paragraph 10. Reconsideration of these rejections is requested.

Senn discloses a machine used to spot weld heavy concrete reinforcing mesh. See column 2, lines 17-19. A row of 32 welding guns 120 is used to weld cross rods 18 to longitudinal rods 16.

See Senn Figure 2. Upper electrodes 124 contact the rods from above, while stationary lower electrodes 132 contact the rods from below. Current flows from the upper to the lower electrode 132 across a rod 16. Current then flows from lower electrode 132 to adjacent lower electrode 132, then across adjacent rod 16 to adjacent upper electrode 124 to complete the circuit. See column 3, line 64 - column 4, line 3. The current flow is illustrated in somewhat greater detail in Figure 3A of Senn's U.S. Patent No. 3,780,253 and its accompanying description. The Senn '253 patent is referenced in the cited patent.

Current will flow between the upper and lower electrodes in the Senn system, as required to produce welds, only if these two electrodes have opposite polarities. These upper and lower electrodes contact opposite sides of the Senn mesh 12. In contrast, the Applicant's claim 15 specifies that the first and second electrodes of the first welding station each have a planar contact surface "adapted to contact a planar conductive surface of the first side." Even if the Senn mesh had planar conductive surfaces, only the upper electrodes 124 in the Senn system contacts the first side (i.e., upper side) of Senn's mesh. The lower electrodes 132, which have the opposite polarity required by claim 15, only contact the second side (i.e., lower side) of the mesh.

Senn lacks a welding station with two electrodes of opposite polarities, both of which are "adapted to contact a planar conductive surface of the first side" of the mesh 12. Claim 15 is accordingly not anticipated by Senn.

Claims 16-18 each depend from claim 15 and include all of its limitations. These dependent claims are not anticipated by the Senn patent for the same reasons discussed with regard to claim 15.

The Examiner rejected claims 15, 17 and 18 under 35 U.S.C. § 102(b), in reliance on U.S. Patent No. 3,139,504 issued to Ramstein et al. Examiner's Action at 6-7, paragraph 11. Reconsideration of these rejections is requested.

Ramstein shows a multipoint spot welding machine with five electrode pairs in a single row. See Figures 1 and 2 and column 1, lines 69-71. The machine welds overlapping wires or rods into a grid structure for use in reinforcing concrete building structures. See column 1, lines 15-20. The paired electrodes 1 and 2 are situated above and below the workpiece. See Ramstein claim 1.

Ramstein discloses only a single row of vertically aligned electrode pairs, and thus fails to satisfy claim 15's requirement of two longitudinally spaced rows of electrodes. Claim 15 is accordingly not anticipated by Ramstein.

Moreover, the two electrodes of each electrode pair in the Ramstein system must have opposite polarities in order for welding current to flow, but these electrodes are situated on opposite sides of the Ramstein grid. Even if the Ramstein grid had planar conductive surfaces, only the upper electrodes in the Ramstein system contacts the first side (i.e., upper side) of the grid. The lower electrode of each pair, which has the opposite polarity required by claim 15, only contacts the second side (i.e., lower side) of the grid.

Much as with Candiracci, Ramstein lacks a welding station with two electrodes of opposite polarities, both of which are "adapted to contact a planar conductive surface of the first side" of the grid. Claim 15 is accordingly not anticipated by Ramstein.

E. Other Amendments and New Claims.

In view of the Examiner's restriction requirement, the title has been amended to PANEL ASSEMBLY APPARATUS, which is believed to better describe the currently claimed subject matter.

Withdrawn claims 1-14 have been cancelled.

Claim 15 has been amended to describe the pair of electrodes of the first welding station as "first" and "second" electrodes.

New claim 19 depends from claim 15, and adds the limitation of a panel framework situated within the welding area. The panel framework is further characterized as comprising at least one channel-shaped first rail having a plurality of longitudinally spaced openings therein. The panel framework further comprises a plurality of longitudinally spaced upright members. Each upright member extends in transverse relationship to the at least one first rail, through the rail channel thereof, and through a corresponding opening therein. None of the cited references discloses a panel framework having the claimed characteristics.

New claim 20 depends from claim 19 and characterizes the rail of the panel framework as having a web with spaced side walls extending therefrom. At least one of the side walls is

characterized by a weld-forming region which projects within the rail channel.

New claim 21 depends from claim 19 and further characterizes the panel framework as comprising a second channel-shaped rail disposed in laterally spaced parallel relationship to the first rail. Each upright member extends in transverse relationship to the second rail, and within the rail channel thereof.

New claim 22 depends from claim 19 and provides that the width of the first electrode is least about 75% of the width of the first rail.

New claim 23 depends from claim 22 and provides that the width of the second electrode is least about 75% of the width of an upright member.

New claim 24 depends from claim 19 and introduces the same limitation as claim 23.

New claim 25 depends from claim 15 and characterizes the first and second electrodes as having a center-to-center separation of between about 2 and about 3 inches. None of the cited references discloses this feature.

New independent claim 26 is phrased similarly to original claim 15, before amendment, but omits the second welding station. In its place, this independent claim adds the same limitation added in claim 19, namely a panel framework situated within the welding area. The panel framework includes at least one channel-shaped first rail having a plurality of longitudinally spaced openings therein, and a plurality of longitudinally spaced upright members.

Each upright member extends in transverse relationship to the at least one first rail, through the rail channel thereof, and through a corresponding opening therein. None of the cited references discloses a panel framework having the claimed characteristics.

New claim 27 depends from claim 26 and adds a second welding station in terms similar to those used in unamended claim 1.

New claim 28 depends from claim 26 and adds the same limitation introduced in claim 20.

New claim 29 depends from claim 26 and adds a limitation similar to that offered in claim 28, except that "each" side wall, rather than "at least one side wall" is characterized by a weld-forming region which projects within the rail channel.

New claim 30 adds a limitation similar to that offered in claim 21, but adds the further limitation of a third electrode adapted to contact the second rail.

New claim 31 depends from claim 26 and adds the same limitation offered in claim 22.

New claim 32 depends from claim 26 and adds the same limitation offered in claim 23.

New claim 33 depends from claim 26 and adds the same limitation offered in claim 25.

New claim 34 depends from claim 26 and adds the same limitation offered in claim 16.

F. Conclusion.

The Examiner's attention is directed to the pending Request to Correct Inventorship filed December 31, 2003. The Examiner is asked to act on this Request, and to correct the inventorship on this application as requested.

The Examiner's attention is further directed to four (4) Electronic Information Disclosure Statements that have been filed since the last Action was mailed.

In view of the foregoing, it is believed that the application, as amended, now is in condition for allowance. In the event that the Examiner has any questions or comments concerning the application or this Amendment, the undersigned would welcome the opportunity to discuss the case with the Examiner.

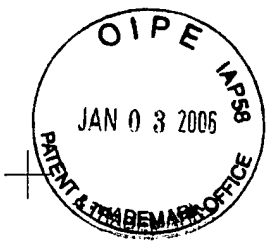
This is intended to be a complete response to the Examiner's Action mailed August 29, 2005.

Respectfully submitted,

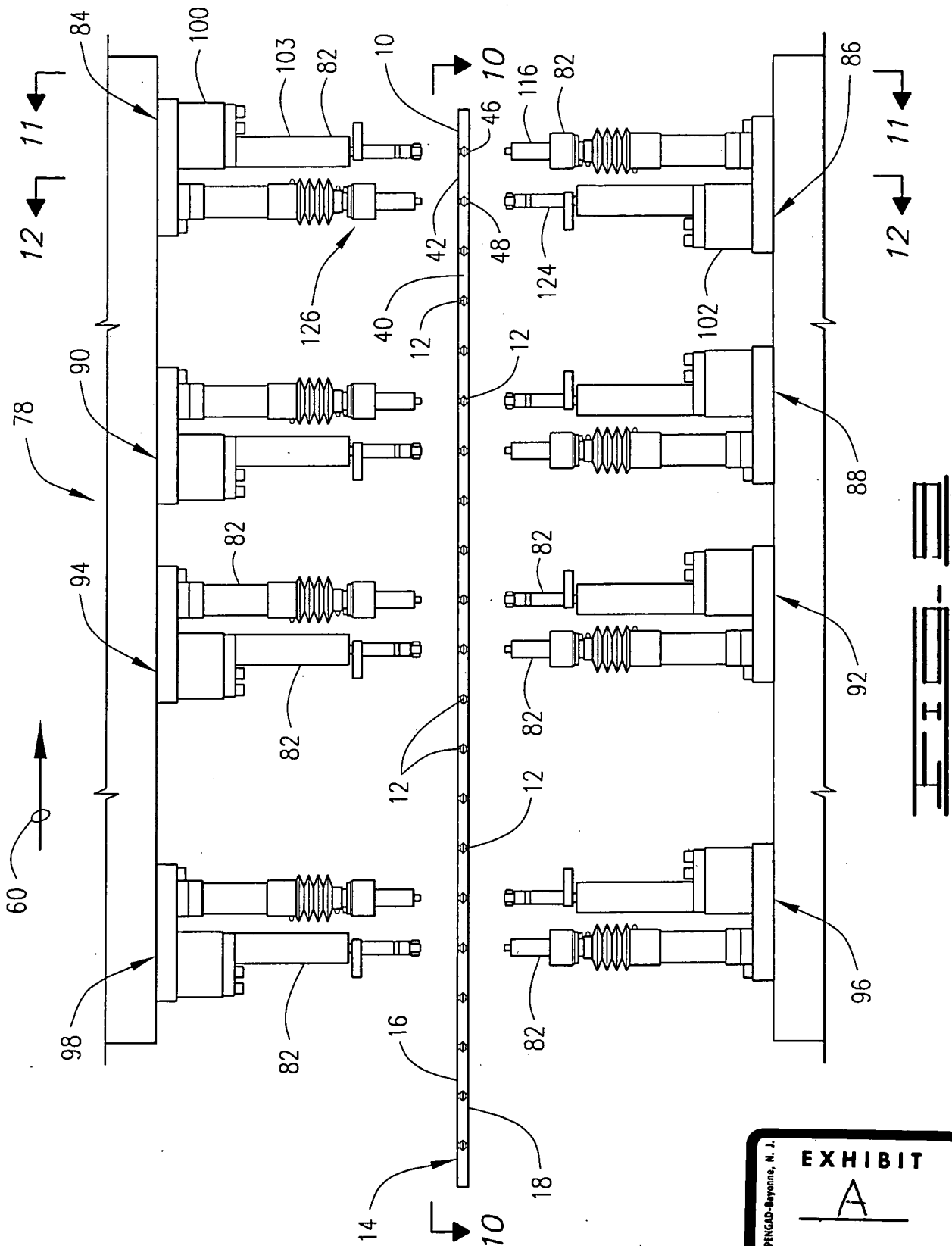


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